

**REMARKS**

Claims 1-6, 8-11, 14-18, 22, 30-31, 39, 45-46, 52-53, 55 and 58 are amended.

Claim 29 is cancelled. Claims 1-28 and 30-61 are pending in the application.

Claims 1-61 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over various cited combinations of Jones, U.S. Patent No. 5,254,210; Abe, U.S. Patent No. 5,200,388 and McMillan, U.S. Patent No. 5,316,579. The Examiner is reminded by direction to MPEP § 2143 that a proper obviousness rejection has the following three requirements: 1) there must be some suggestion or motivation to modify or combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the combined references must teach or suggest all of the claim limitations. Pending claims 1-28 and 30-61 are allowable over Jones, Abe and McMillan for at least the reason that the references, individually or as combined, fail to disclose or suggest each and every limitation in any of those claims.

As amended, independent claim 1 recites a first valve proximate a body, the first valve being a multi-inlet valve having at least two inlets and at least one outlet where a first inlet of the first valve is configured for connection with a reactive precursor source and the valve outlet feeds to a precursor inlet to a plenum chamber, and where the first valve is the only valve associated with the precursor inlet. Claim 1 further recites a second valve associated with a purge gas stream, the second valve being a single-inlet valve having a single inlet and a single outlet. The amendment to claim 1 is supported by the specification at, for example, Figs. 1, 2 and 3 and the text at page 6, lines 9-22; and page 8, lines 1-5. Jones discloses a gas switching manifold 80 which utilizes three way pneumatic valves 81, and indicates that pneumatic valves 81 each have an inlet for the respective reactant gas

and two outlets configured such that the reactive gas can be alternately flowed into the reactor or a bent line (Fig. 1 and col. 3, ll. 66 through col. 4, ll. 24). Jones does not disclose or suggest the claim 1 recited sole valve associated with an inlet to a plenum chamber being a multi-inlet valve having a first valve inlet configured for connection with a react precursor source, and a second valve which has a single inlet and which is associated with a purge gas stream having a purge gas inlet received up stream of the plenum chamber precursor inlet.

The Examiner indicates at page 4 of the present Action that Abe teaches a purge stream having a purge inlet to a plenum chamber and references a precursor header to "exhaust device" and indicates that the purge inlet is shown at a second valve which has a single inlet and which is associated with a purge gas stream having a purge gas inlet received up stream of the plenum chamber precursor inlet. The Examiner further indicates that the purge inlet is shown at 90° to a precursor inlet. The Examiner is mistaken.

First, applicant notes that Abe teaches utilization of separate ducts to provide gasses directly to a growth tank 11 (Fig. 4 and col. 4, ll. 11-14). Nowhere does Abe disclose or suggest utilizing a manifold having a plenum chamber. Applicant further notes that Abe discloses a vacuum exhaust device which is utilized to evacuate growth tank 11 (col. 4, ll. 5-10). No where does Abe disclose or suggest purging or utilizing a purge stream as stated by the Examiner. Accordingly, the Examiner's statements indicating that Abe teaches a purge stream, a plenum chamber or a "precursor header" are not supported by the Abe disclosure. As combined with Jones, the utilization of individual ducts and a vacuum exhaust device as disclosed in Abe does not contribute toward suggesting the claim 1 recited first valve having at least two inlets, and a second valve associated with a

purge gas, the second valve being a single inlet valve and being associated with a purge gas stream having a purge gas inlet to a plenum chamber upstream of the precursor inlet. Accordingly, independent claim 1 is not rendered obvious by the combination of Jones and Abe.

McMillan discloses a manifold assembly 114 (Fig 5) which is indicated as being the same as an assembly 40 shown in Fig. 3 (col. 10, ll. 40-42). Assembly 40 is indicated as having a plurality of inlets 44 connected to source generators 46 through valves 48. As indicated at pages 4-5 of the present Action, McMillan is relied upon as showing a flange structure on the body of manifold 114 (with reference to a 114/102 interface in Fig. 5). However, applicant notes that manifold 114 is shown as being connected to through a tube connection. Nowhere does McMillan disclose or suggest a flange body portion as indicated by the Examiner. Further, as combined with Abe and Jones, McMillan does not contribute toward suggesting the claim 1 recited first valve which is a multi-inlet valve configured for connection with a reactive precursor and a second valve associated with a purge gas stream having a purge gas inlet upstream of the plenum chamber precursor inlet where the second valve has a single inlet and single outlet. Accordingly, independent claim 1 is not rendered obvious by the cited combinations of Jones, McMillan and Abe and is allowable over these references.

Claims 2-6 and 8-11 are amended to properly depend from claim 1. Dependent claims 2-13 are allowable over Jones, Abe and McMillan for at least the reason that they depend from allowable base claim 1.

As amended, independent claim 14 recites a first precursor feed stream in fluid communication with a plenum chamber at a first precursor inlet, a second precursor feed

stream in fluid communication with the plenum chamber at a second precursor inlet and a purge gas stream upstream of both the first and second plenum chamber precursor inlets where a purge gas flow through the purge gas inlet provides a venturi effect within the plenum chamber relative to the first and second precursor inlets. The amendment to claim 14 is supported by the specification at, for example, page 10, lines 5-18. None of the recited references, or any combination thereof, teach or suggest the claim 14 recited configuration where a purge gas flown through a purge gas inlet located upstream of a first and second plenum chamber precursor inlets provides a venturi effect within the plenum chamber relative to the first and second precursor inlets. Accordingly, independent claim 14 is not rendered obvious by the cited combinations of Jones, Abe and McMillan and is allowable over these references.

Claims 14-18 are amended to properly depend from independent claim 14. Dependent claims 14-21 are allowable over McMillan, Abe and Jones for at least the reason that they depend from allowable base claim 14.

As amended, independent claim 22 recites a manifold assembly having a longitudinally elongated plenum chamber, the body of the manifold having a purge gas inlet proximate a first longitudinal access end and a plenum chamber outlet proximate a second longitudinal access end where the longitudinal access is substantially vertical when the plenum chamber outlet is connected with a substrate processing chamber. The amendment to claim 22 is supported by the specification at, for example, page 8, lines 6-15. None of Jones, McMillan, Abe or any combination thereof discloses or suggests the claim 22 recited manifold having a longitudinally elongated plenum chamber where the longitudinal access is substantially vertical when the plenum chamber outlet is connected

with a substrate processing chamber, where the plenum chamber outlet of the manifold body is configured to connect with the substrate processing chamber. Accordingly, independent claim 22 is not rendered obvious by the cited combinations of Jones, Abe and McMillan and is allowable over these references.

The subject matter of claim 29 is incorporated into claim 22 by amendment. Claim 29 is appropriately cancelled. Claim 30 is amended to properly depend from independent claim 22. Dependent claims 23-28 and 30 are allowable over McMillan, Abe and Jones for at least the reason that they depend from allowable base claim 22.

As amended, independent claim 31 recites a manifold assembly having a body with a first end and an opposing second end and having a purge gas stream in fluid communication with a plenum chamber at a purge gas inlet proximate the first end and disposed upstream of plenum chamber precursor inlets. The manifold assembly body further comprises an outlet disposed at the opposing second end and configured to connect with a substrate processing chamber via a structure of the manifold body. None of McMillan, Jones and Abe, or any combination thereof, discloses or suggests the claim 31 recited manifold assembly having a body with a purge gas inlet proximate a first end and upstream of plenum chamber precursor inlets, and an outlet disposed at an opposing second end, the outlet being configured to connect with a substrate processing chamber via a structure on the body of the manifold assembly. Accordingly, independent claim 31 is not rendered obvious by the cited combinations of Jones, McMillan and Abe and is allowable over these references.

Dependent claims 32-38 are allowable over Abe, McMillan and Jones for at least the reason that they depend from allowable base claim 31.

As amended, independent claim 39 recites an elongate body of a manifold assembly having a plenum chamber outlet disposed substantially vertically opposed to a purge gas inlet, where a longitudinal access of a plenum chamber comprised by the elongate body is substantially vertical when the body is mounted on a substrate processing chamber. Abe, McMillan, Jones and any combination thereof fails to disclose or suggest the claim 39 recited elongate body having an elongate plenum chamber with a longitudinal access which is substantially vertical when the body is mounted to a substrate processing chamber, the body having an outlet substantially vertically opposed relative to a purge gas inlet. Accordingly, independent claim 39 is not rendered obvious by the cited combinations of McMillan, Abe and Jones and is allowable over these references.

Dependent claims 40-44 are allowable over Abe, McMillan and Jones for at least the reason that they depend from allowable base claim 39.

As amended independent claim 45 recites multi-inlet valves positioned proximate a elongate body in respective precursor feed streams where the multi-inlet valves have at least two valve inlets and one valve outlet, the elongate body further comprising a purge gas stream which feeds through a purge gas inlet through a single inlet valve. Claim 45 is allowable over the various cited combinations of McMillan, Abe and Jones for at least reasons similar to those discussed above with respect to independent claim 1.

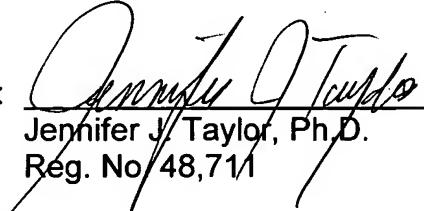
Dependent claims 46, 52-53, 55 and 58 are amended to properly depend from independent claim 45. Dependent claims 46-61 are allowable over Abe, McMillan and Jones for at least the reason that they depend from allowable base claim 45.

For the reasons discussed above, pending claims 1-28 and 30-61 are allowable. Accordingly, applicant respectfully requests formal allowance of such pending claims in the Examiner's next action.

Respectfully submitted,

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By:

  
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